

Claims

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- 3 1. A method of operating a file server, comprising the steps of:  
4 receiving a CIFS request; and  
5 recording state at that time about the request; and  
6 restoring state upon reboot as last recorded; and  
7 attempting to continue the CIFS session that the request was part of.  
8
- 9 2. The method of claim 1, wherein said step of receiving a CIFS request also includes  
10 the steps of  
11 acknowledging receipt of said CIFS request; and  
12 processing said CIFS request.  
13
- 14 3. The method of claim 1, wherein said step of recording state includes determining  
15 automatically whether the processing of a CIFS request is at a point where said state  
16 can be reliably recorded.  
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- 18 4. The method of claim 3, wherein said step of recording state occurs at points based on  
19 the progress of processing of a CIFS request.  
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- 21 5. The method of claim 4, wherein said state is recorded to a non-volatile storage  
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- 23 6. The method of claim 1, wherein said step of recording state occurs as part of an  
24 elective reboot or elective takeover of a server further comprising:  
25 ignoring current CIFS requests;  
26 processing all active CIFS requests; and



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2 14. The method of claim 13, wherein said flag value indicates said recovery will be  
3 accomplished by rebooting the affected server.

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5 15. The method of claim 13, wherein said flag value indicates said recovery will be  
6 accomplished by takeover by another server.

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8 16. The method of claim 1, wherein said step of restoring state further comprises  
9 determining whether recovery is by reboot or takeover by another server.

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11 17. The method of claim 16, wherein said step of determining whether recovery is  
12 accomplished by reboot or takeover by another server is a function of said flag value  
13 stored in said non-volatile storage.

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15 18. The method of claim 17, wherein said reboot comprises the steps of:  
16 rebooting the affected server's operating system; and  
17 rebuilding in-memory data structures to the state prior to said reboot.

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19 19. The method of claim 18, wherein said rebuilding in-memory data structures further  
20 comprises fetching the state stored in said non-volatile storage to rebuild said in-  
21 memory data structures.

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23 20. The method of claim 17, wherein said takeover comprises fetching the state stored in  
24 the non-volatile storage and rebuilding said in-memory data structures in another  
25 server using said state.  
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1 21. The method of claim 1, wherein said step of attempting to continue the CIFS session  
2 that the request was part of further comprises the step of processing the remaining  
3 portion of the uncompleted request.

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5 22. Apparatus including;

6 means for receiving a CIFS request; and

7 means for recording state at that time about the request; and

8 on reboot, restoring state as last recorded; and

9 means for attempting to continue the CIFS session that the request was part

10 of.

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12 23. The apparatus of claim 22, wherein said means for receiving a CIFS request includes  
13 a means for acknowledging receipt of said CIFS request and a means for processing  
14 the request.

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16 24. The apparatus of claim 22, wherein said means for recording state includes a means  
17 to determine automatically whether the processing of a CIFS request is at a point  
18 where said state can be reliably recorded.

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20 25. The apparatus of claim 24, wherein said means for recording state occurs at points  
21 based on the progress of processing of a CIFS request.

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23 26. The apparatus of claim 25, wherein said state is recorded to a non-volatile storage

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25 27. The apparatus of claim 22, wherein said means for recording said state occurs as part  
26 of an elective reboot or elective takeover of a server further comprising:

1 means for ignoring current CIFS requests;  
2 means for processing all active CIFS requests; and  
3 means for recording state.  
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6 28. The apparatus of claim 27, wherein all currently active requests are processed to  
7 completion.  
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9 29. The apparatus of claim 22, wherein said means for recording state further comprises a  
10 means for determining whether said server shutdown was elective or non-elective.  
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12 30. The apparatus of claim 27, wherein said means for determining whether said server  
13 shutdown was elective or non-elective is a function of a flag value stored in said non-  
14 volatile storage.  
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16 31. The apparatus of claim 30, wherein said flag value indicates said server shutdown  
17 was elective.  
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19 32. The apparatus of claim 30, wherein said flag value indicates said server shutdown  
20 was non-elective.  
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22 33. The apparatus of claim 22, wherein said means for recording state further comprises a  
23 means for determining whether recovery will be accomplished by rebooting the  
24 affected server or takeover by another server.  
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1 34. The apparatus of claim 33, wherein said means for determining whether recovery  
2 will be accomplished by rebooting the affected server or takeover by another server is  
3 a function of said flag value stored in said non-volatile storage.

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5 35. The apparatus of claim 34, wherein said flag value indicates said recovery will be  
6 accomplished by rebooting the affected server.

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8 36. The apparatus of claim 34, wherein said flag value indicates said recovery will be  
9 accomplished by takeover by another server.

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11 37. The apparatus of claim 22, wherein said means for restoring state further comprises  
12 means for determining whether recovery is by reboot or takeover by another server.

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14 38. The apparatus of claim 37, wherein said means for determining whether recovery is  
15 by reboot or takeover by another server is a function of said flag value stored in said  
16 non-volatile storage.

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18 39. The apparatus of claim 38, wherein said reboot further comprises:  
19 means for rebooting the affected server's operating system; and  
20 means for rebuilding in-memory data structures to the state prior to said reboot.

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22 40. The apparatus of claim 39, wherein said means for rebuilding in-memory data  
23 structures further comprises fetching the state stored in said non-volatile storage to  
24 rebuild said in-memory data structures.

